LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES SECTION

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

DUBUISSON LAKE

WATERBODY EVALUATION &
RECOMMENDATIONS

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

May 2014 - Prepared by Jody David, Biologist Manager,
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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational
Sportfish species are managed to provide a sustainable population while providing anglers with the opportunity to catch or harvest numbers of fish adequate to maintain angler interest and efforts.

Commercial
Commercial species are managed to provide a sustainable population.

Species of special concern
No threatened or endangered species have been observed in Dubuisson Lake.

EXISTING HARVEST REGULATIONS

Statewide regulations have been in effect for all species since impoundment.
Fishing regulations may be viewed at the link below:
http://www.wlf.louisiana.gov/fishing/regulations

SPECIES EVALUATION

Recreational
Largemouth bass (*Micropterus salmoides*) are targeted for evaluation since they are a species indicative of the overall fish population due to their high position in the food chain and because they are highly sought after by anglers. Electrofishing is the best indicator of largemouth bass (LMB) relative abundance and size distribution, with the exception of large fish. Sampling with gill nets determines the status of large bass and other large fish species.

Largemouth Bass-

Relative abundance and size distribution
Electrofishing has been used to collect LMB population data in Dubuisson Lake since 1990. Catch per unit effort (CPUE) results from electrofishing are normally based on the number of fish captured in one hour of electrofishing. This value provides an estimate of relative abundance and allows us to monitor changes in abundance over a period of time. The CPUE of largemouth bass collected from Dubuisson Lake by electrofishing from 1990 to 2014, indicates variability in some years (e.g., 2009 compared to 2012); however, the long-term trend is one of stable abundance (Figure 1). Electrofishing sampling is conducted during day time hours. The number of sample sites is determined by the total acres of a water-body. Three sites are sampled on Dubuisson Lake. Each station represents a different habitat type such as aquatic vegetation edges, shoreline, and drop offs. As indicated in Figure 1, the abundance of all size groups of bass was lowest in 2009, with the highest total CPUE noted in 2012. A decline in the number of bass per hour in 2009 is related to a fish kill that occurred in 2008 following Hurricane Gustav. Depleted oxygen levels caused a large number of fish to perish. Sample catch rates began an upward trend as shown in 2012,

especially in the number of stock-size bass. The size distribution of the 2012 largemouth bass population is shown in Figure 2. Size groups ranged from 5 to 16 inches with those in the 10 – 11 inch groups being the most numerous. In 2014, sample numbers were relatively low in all size groups. Beginning in 2014, electrofishing samples for largemouth bass will be collected every fourth year thereafter.

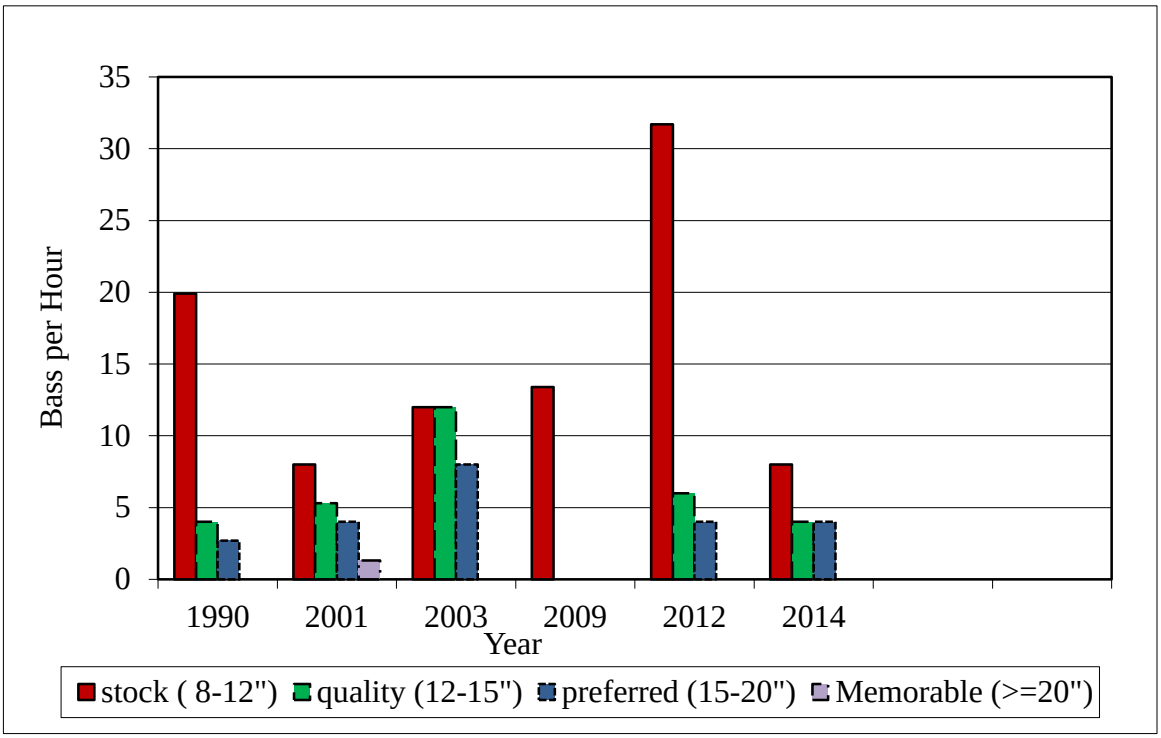

Figure 1. The catch-per-unit-of-effort (CPUE: number per hour) for largemouth bass of stock-, quality-, preferred-, and memorable-size fish captured at Dubuisson Lake, LA, from spring electrofishing for years 1990-2014.

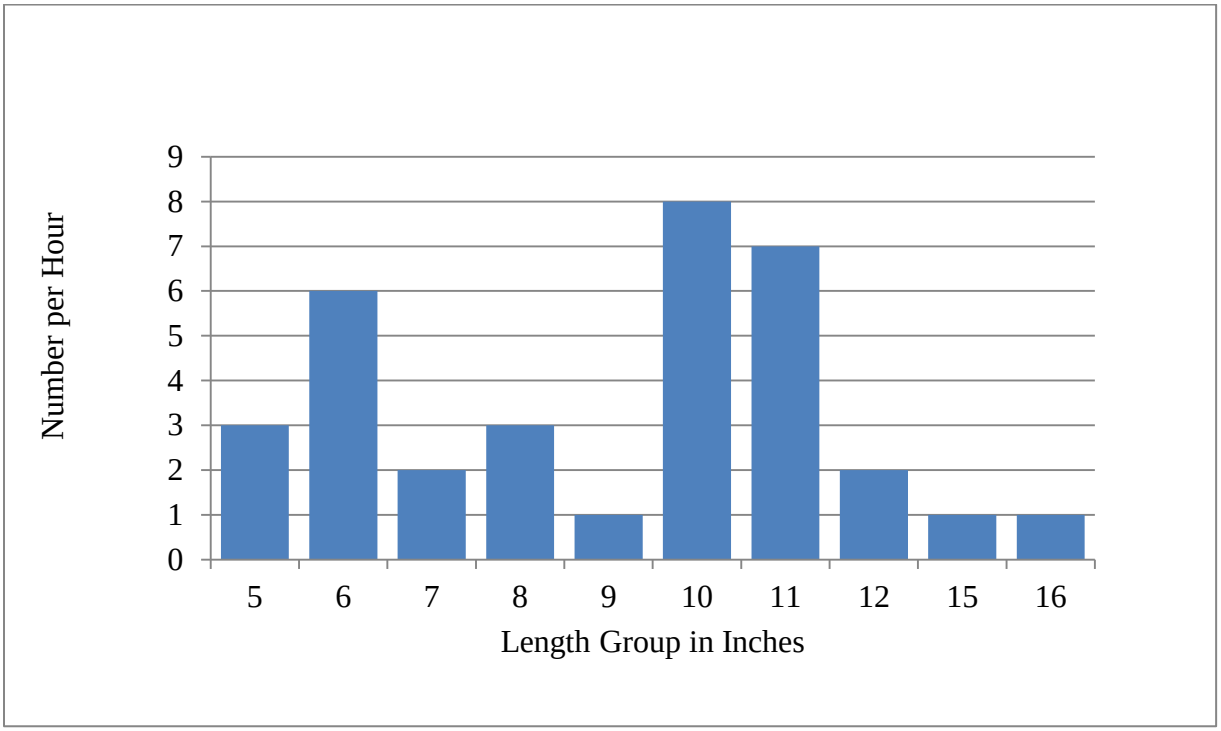

Figure 2. The size distribution (inch groups) of largemouth bass sampled per hour of electrofishing taken on Dubuisson Lake, Louisiana from spring 2012.

Crappie

Electrofishing

Relative abundance and size distribution

The CPUE of black crappie and white crappie collected from Dubuisson Lake by electrofishing from 1990-2014 indicate annual variability (Figure 3). In 2009, there were only a couple of crappie captured by electrofishing. The low catch rate was the result of a fish kill in August 2008 following Hurricane Gustav. Poor water quality parameters occurred, such as dissolved oxygen levels, therefore fish perished throughout the lake. Crappie catch rates increased substantially in 2012 and 2014 showing an increase in all size groups. Electrofishing results in 2014 show numerous quality-size and preferred-size crappie in the population. The majority of crappies (95%) collected in Dubuisson Lake are white crappie.

The crappie data collected in spring 2014 suggested an abundance of crappies in the 9 – 10 inch groups which indicates successful recruitment the previous spring (Figure 4). The increase in crappie abundance may have been due to the lack of fishing pressure on the lake for several months. The area/lake was closed from September 2013 to March 2014, by Louisiana Department of Transportation and Development (LADOTD) to make improvements to the rest area. While crappie populations consist primarily of white crappie, some black crappie in the 8-10 inch groups, were also collected.

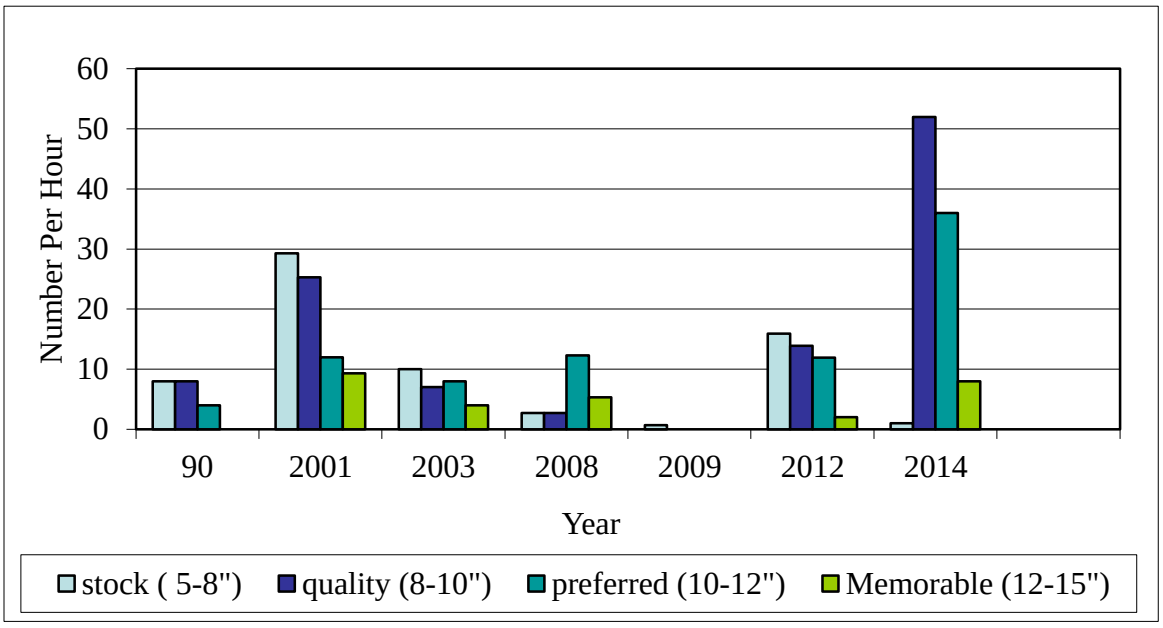

Figure 3. The catch-per-unit-of-effort (CPUE: number per hour) for black and white crappies of stock-, quality-, preferred-, and memorable-size fish captured at Dubuisson Lake, LA, by electrofishing for the years 1990-2014.

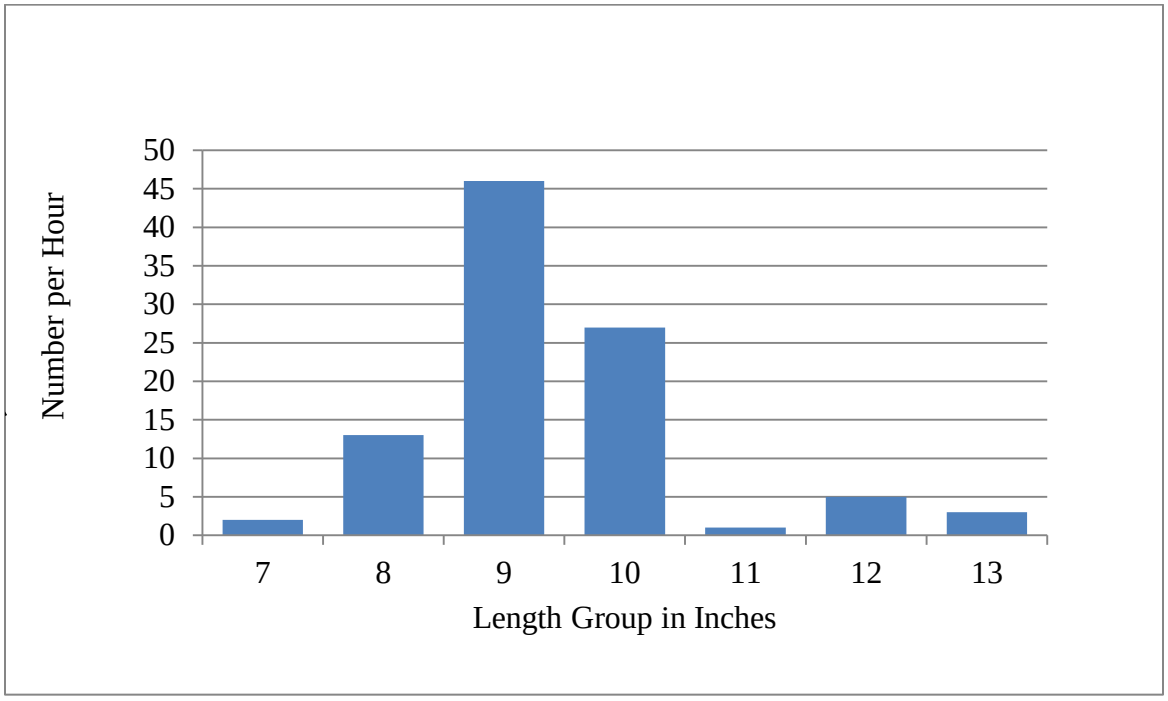

Figure 4. The size distribution (inch groups) of black and white crappies sampled per hour of electrofishing on Dubuisson Lake, Louisiana from spring samples 2014.

Frame nets

Dubuisson Lake was sampled for the first time with frame nets for crappie in 2003. Length

distributions of crappie indicated good numbers of fish up through the nine inch size group (Figure 5). The majority of crappie captured consisted of white crappie (66%). White crappie remain the dominate species harvested. Lead net sampling is scheduled for 2014.

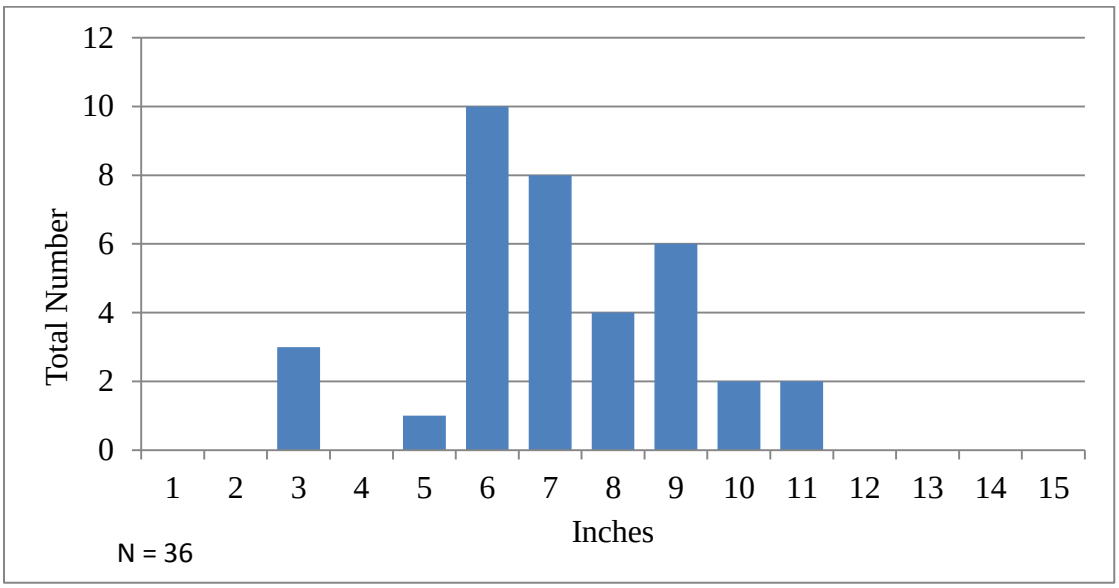

Figure 5. The size distribution of crappie captured at Dubuisson Lake, Louisiana in frame nets samples in 2013.

Forage

Threadfin and gizzard shad and sunfishes have been identified as primary bass forage species in Dubuisson Lake. During fall electrofishing, a 900 second sample is collected to determine forage abundance. However, there is a difference between forage abundance and availability. Measurements of largemouth bass body condition are recorded to determine utilization of available forage. Relative weight (Wr) is a measure of fish condition and is the ratio of the fish weight to that of a determined standard weight for healthy fish. Largemouth bass Wr below 80 may indicate a potential problem with forage availability, while Wr near or above 100 indicates a healthy bass population. Shad and sunfish are susceptible to largemouth bass predation as relative weights in Dubuisson Lake averaged 94 in all years in which Wr's were measured (Figure 6).

Shoreline seine samples are conducted in the summer months, June – August. All samples were conducted at night from one-half hour after sunset until one –half hour before sunrise. One quadrant haul, using a 25 foot / six foot seine, was conducted at each sampling station. One sample was taken at the boat ramp. The quadrant haul was conducted by anchoring one end of the seine at the shoreline and the other stretched perpendicular to the shoreline.

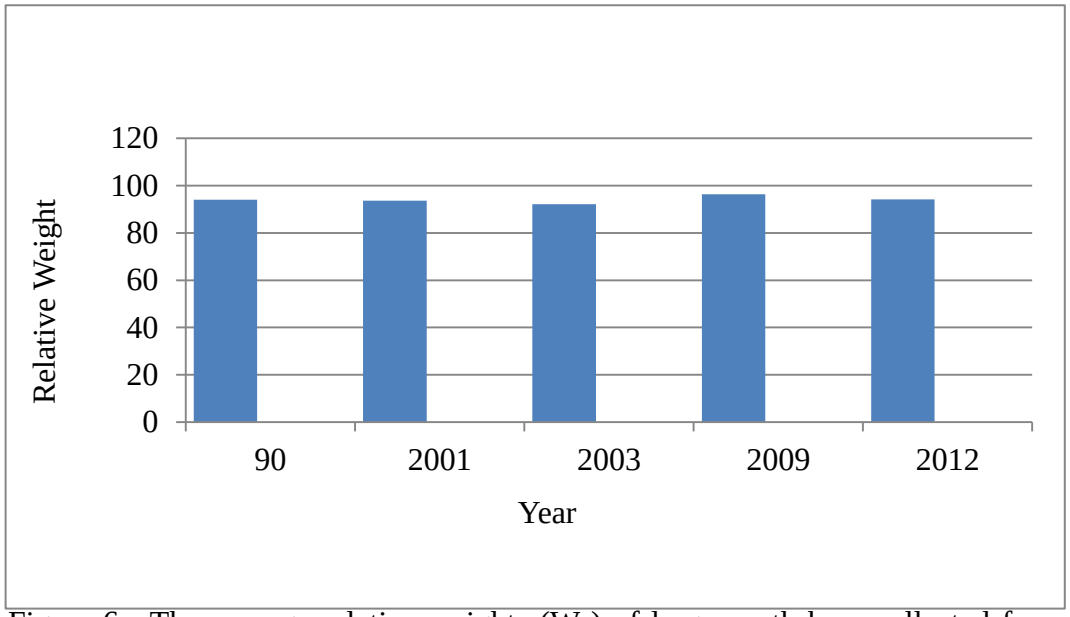

Figure 6. The average relative weights (Wr) of largemouth bass collected from Dubuisson Lake, LA, in fall electrofishing samples for the years 1990 – 2012.

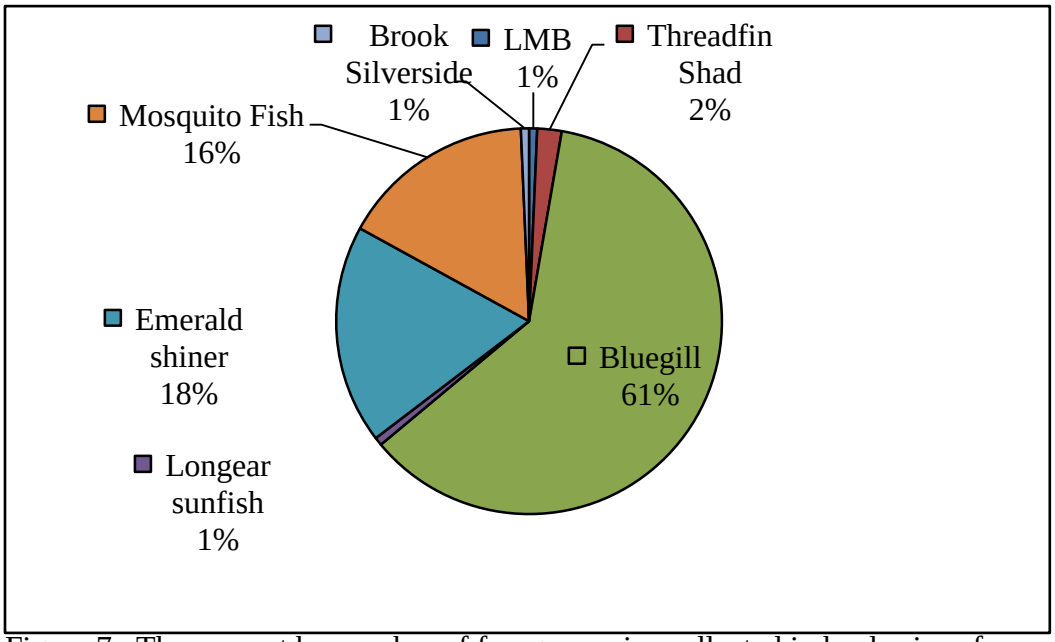

Figure 7. The percent by number of forage species collected in haul seines from Dubuisson Lake, Louisiana for 2009.

The distal end of the seine is then swung around back to the shoreline, keeping the lead line tight and on the bottom. After the seine haul is completed, all fish from the seine are placed in a plastic bag, properly marked, and placed on ice. Fish specimens are sorted to species, and by length. The sample was taken a year after the fish kill in 2008 following Hurricane Gustav. Figure 7 shows that sunfish (bluegill) make up the largest percentage of Dubuisson Lake forage. Shiners and mosquitofish are also numerous.

The total pounds captured per hour of electrofishing were calculated for fall forage samples (Table 1). All common carp, buffalo and channel catfish collected were greater than 6 inches in total length (TL). Also, the majority of largemouth bass captured were greater than 6 inches TL. Overall, pounds decreased in 2009 due to a fish kill following Hurricane Gustav in 2008.

Table 1. Estimate of lbs. /hr. for all species of fish captured during fall forage electrofishing samples on Dubuisson Lake, Louisiana, 2009 and 2012.

Species	2009	2012
LMB	0.74	9.30
Bluegill	1.12	1.26
Longear Sunfish	2.95	4.43
Common Carp		
Smallmouth Buffalo		
Gizzard shad	2.78	3.26
Brook Silversides	0.53	0.02
G. Shiner	0	0.03
Channel Catfish	0	4.88
Threadfin shad	1.29	20.29

Commercial

Commercial fishing is very limited in Dubuisson Lake because of its small size. The occurrence of anglers targeting this fishery is low. Species targeted include buffalo, freshwater drum and common carp (Table 2). Monofilament gill nets are used by LDWF as sampling gear in winter months to determine the size distributions of large sportfish, rough fish or commercial fish species. The minimum number of gill net sets is determined by the surface area of the impoundment. A net set consists of four, 100 yard nets of the following mesh sizes: 2.5 inches, 3 inches, 3.5 inches and 4 inches. Gill nets are set within one hour of sunset and retrieved as soon as possible after sunrise. Sets are restricted to the time period between December 1 and February 28 in order to avoid temperature related mortality. All fish captured are individually measured, total length, in millimeters and weighed in grams. Buffalo fish is the most numerous species followed by blue catfish. Overall numbers of commercial species in the samples are low.

Table 2. Total number of all fish species captured by gill net per year for Dubuisson Lake, LA for 2003 and 2009.

Species	2003	2009
Common Carp	1	1
Freshwater Drum	1	0
Bigmouth Buffalo	5	5
Smallmouth Buffalo	9	3
Paddlefish	1	0
Gizzard Shad	1	0
Blue Catfish	5	0

Water Quality

Dubuisson Lake receives nutrient rich runoff from agriculture fields and some hardwood forest that surround 75% of the lake. This lake is turbid throughout the year, but especially turbid after heavy rain events. The only time the lake develops a plankton bloom is during the summer months when rain events are minimal.

Water quality parameters such as dissolved oxygen, temperature, pH, conductivity, and water depth are measured concurrent with other standardized sampling efforts and during random site visits. In 2008, dissolved oxygen (DO) levels fell below 2.0 mg/l (Figure 8). This was due to hypoxic conditions created by the effects of Hurricane Gustav (turnover and mixing) and resulted in a fish kill. In 2010, DO levels fell below 2.0 mg/l at the bottom of the lake and this hypoxia may have been related to the ongoing drought conditions and high temperatures. This in turn may have resulted in stratification within the lake.

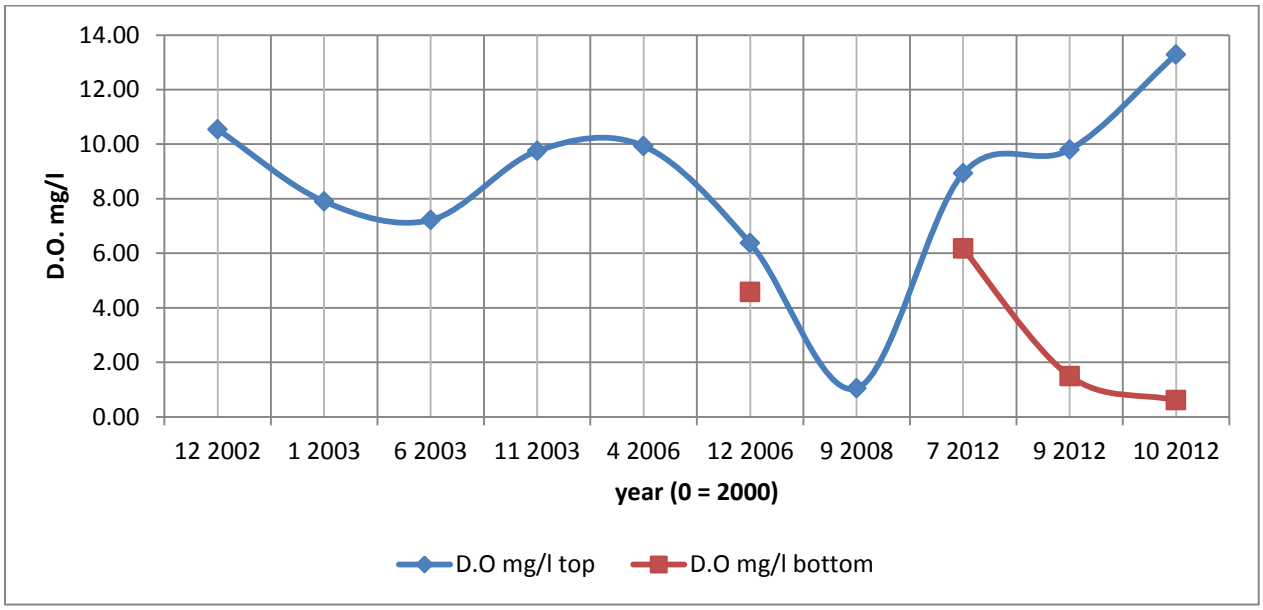

Figure 8. Dissolved oxygen readings taken during electrofishing samples and random samples in Dubuisson Lake, Louisiana, years 2002 – 2012.

HABITAT EVALUATION

Aquatic Vegetation

No aquatic vegetation – floating or submersed

CONDITION IMBALANCE / PROBLEM

The dirt from this lake was used to construct I-49 and build a rest area adjacent to the lake. The lake is 25 -30 feet deep and very shallow near the shoreline. It is generally turbid year round due to runoff from irrigation practices, but develops a plankton bloom in the late summer months. There is no water control structure in this lake. There is a levee around the lake with natural drainage areas where water enters and exits the lake. Aquatic vegetation is not a problem in this small impoundment.

CORRECTIVE ACTION NEEDED

1. Educate adjacent land owners on improved agricultural practices.

2. Public meetings are needed to inform the citizens of all fisheries management practices.

RECOMMENDATIONS

1. Work cooperatively with LADOTD and private land owners to establish improved methods to control agricultural run-off.

2. Work cooperatively with LADOTD on a sufficient water control structure for proper water level fluctuations.

3. Conduct public meetings to inform the public of all fisheries management decisions that affect Dubuisson Lake. Also, all recommendations will be presented to LADOTD for approval.

4. Continue standardized fisheries sampling on Dubuisson Lake every fourth year to assess populations.